

The HDX Experience Revisited: New Applications and Potential Standards for Fish Passage Evaluation

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Abstract:

Technological advancement of the Texas Instruments TIRFID S-2000 half-duplex RFID system has allowed development of further applications for monitoring upstream and downstream passage in moderately-sized structures, including new antenna designs and reader multiplexing. New hardware is also being developed to simplify system assembly, deployment, and operation, and to improve system reliability. Analyses of extensive PIT datasets have provided new insights on behavior of fish within passage structures and also new perspectives on how passage is quantified and expressed. We demonstrate how passage data from fishways and downstream bypass structures can be analyzed to provide information on migratory timing, attraction, passage, delays, passage “bottlenecks”, and inter- as well as intra-specific variation in fish passage behavior. Effects of hydraulic and environmental conditions on passage behavior can also be assessed. We also offer several new potential methods for standardized analyses of passage performance that allow comparison of performance between structure types and sites.